

STUDIES IN MACQUARIE ISLAND LICHENS 3: THE GENUS SPHAEROPHORUS

by

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ABSTRACT

Filson, Rex B. Studies on Macquarie Island lichens 3: the genus *Sphaerophorus*. *Muelleria* 6(3): 169-172 (1986). — Two species in the genus *Sphaerophorus* are described and illustrated and a key is provided, with notes on their chemical constituents and distribution maps.

INTRODUCTION

This paper is a continuation of a series of papers on the lichens of Macquarie Island (Filson 1981, 1981a). The genus *Sphaerophorus* is included in the family Sphaerophoraceae. It is mainly found in the Southern Hemisphere and of the twenty species discussed by Ohlsson (1973) in his world revision only six occur north of the equator. Galloway (1985) records eleven species as occurring in New Zealand. The two species discussed here are also widespread in New Zealand, Australia, Falkland Islands and South America (Ohlsson 1973). Galloway (Lowry et al. 1978) recorded *Sphaerophorus globosus* (Huds.) Vainio and *S. melanocarpus* (Sw.) DC. on Macquarie Island but the specimens he used cannot be located.

TAXONOMY

KEY TO SPECIES

Thallus sparingly branched; major branches terete to subterete, mostly > 1 mm diam., surface annulately cracked; coralloid phyllocladial branchlets present *S. ramulifer*
Thallus frequently branched; major branches terete, mostly < 1 mm diam., surface not annulately cracked; coralloid phyllocladial branchlets absent *S. tener*

Sphaerophorus ramulifer I. M. Lamb, *Farlowia* 4: 426 (1955). TYPE: Argentina, Patagonia, Rio Negro, near Lago Frias, *I. M. Lamb* 5977. HOLOTYPE: CAN n.v. ISOTYPES: FH, H, both n.v.

Thallus saxicolous, growing amongst bryophytes and other lichens and over the tops of cushion plants, forming compact colonies amongst the substrate; upper surface smooth, convex, annulately cracked, yellowish-green, sometimes with a pale purple stain at the base of the branches; sterile branches terete to subterete to slightly flattened, up to 40 mm long, 0.8-2.0 mm wide, irregularly sympodially branched, with numerous branched, coralloid, phyllocladial branches along the margins and in tufts around the base; fertile branches similar, distorted, sometimes heavily annulately cracked. *Apothecia* subterminal, 1.0-3.0 mm across, opening at an early stage of development by the rupturing of the receptacle; receptacle corticate, thick, with occasional phyllocladial branching along the margin; mazaedium dense; asci cylindrical, 45-60 x 4-7 μm , 8-spored; ascospores pale grey to hyaline, (7.5-) 8.0-9.5(-10.0) μm , diam., often surrounded by a dark carbonaceous material. *Pycnidia* globose, mostly terminal, often laminal and sometimes axillary, immersed in the apical branchlets; microconidia straight or curved, slightly swollen at each end, 3.5-4.0 x 1.0 μm .

REACTIONS; P+ orange or P-, K+ pale yellow or K-, KC-, C-, I-.

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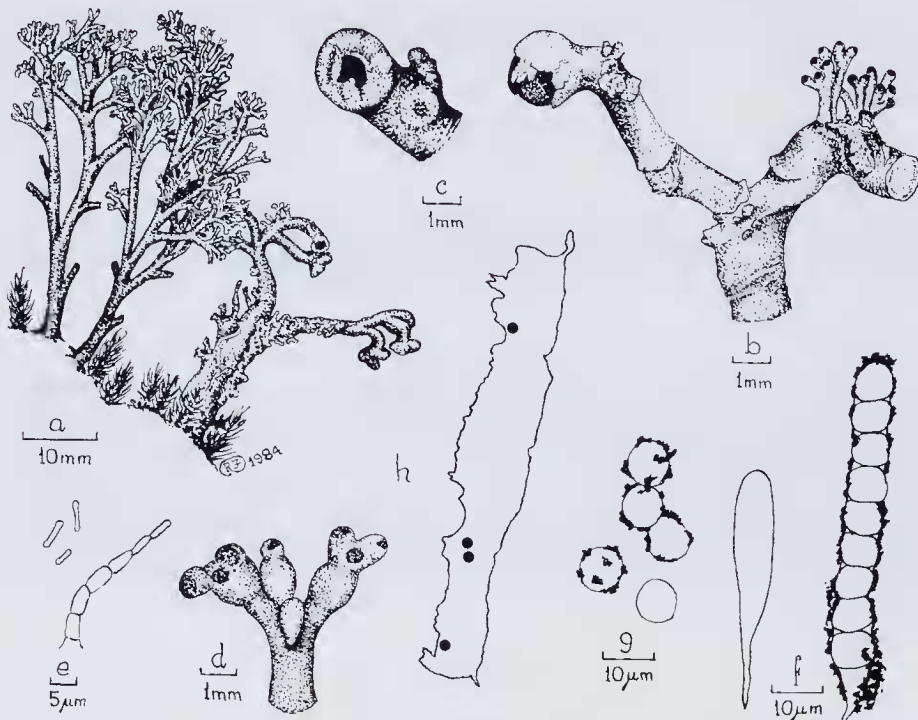


Fig. 1. *Sphaerophorus ramulifer*. a — habit, showing sterile branches and one fertile branch. b — enlargement of upper part of fertile branch showing apothecium. c — enlargement of lower side of apothecium showing the developing apothecium. d — tips of sterile branches showing the location of the pycnidia. e — microconidia-bearing hyphae from the pycnidium, and microconidia. f — ascus from the mazaedium coated with black carbonaceous substance. g — ascospores, one not coated with the black carbonaceous substance. h — known distribution on Macquarie Island. a, d & e from MEL 1047232; b, c, f & g from MEL 1047231.

CHEMISTRY: This species includes several chemotypes all with isousnic acid and sphaerophorin. Some also contain norstictic acid, stictic acid, conorstictic acid and an unknown substance, in varying amounts.

SELECTED SPECIMENS EXAMINED:

Macquarie Island, xii. 1965, *S. Thrower* (MEL 1026732); top of hill above Bauer Bay, S. of small lake, alt. 600 ft, 1.iii.1974, *R. Filson 6278 & P. Atkinson* (MEL 1047234); SE. side of Major Lake, 19.ii.1964, *R. Filson 6173 & R. Peterson* (MEL 1047233); peak of hill above and N. of Caroline Cove, 20.i.1966, *K. Simpson E82* (MEL 1000433).

DISCUSSION:

The flattened branches and the large cracked, fruiting branches make *Sphaerophorus ramulifer* a very distinctive lichen which cannot be confused with any other on Macquarie Island. However it is uncommon and when found is usually eroded and distorted by the harsh conditions. The sterile branches are more protected as they grow well down into the moss cushions but the fertile branches become more exposed and therefore more misshapen.

Sphaerophorus tener (Laurer) Zahlbr., Cat. Lich. Univ. 1: 696 (1922). *Sphaerophoron tenerum* Laurer, Linnaea 2: 45 (1827). "Hab. in Nov. Hollandiae.", *Sieber*. LECTOPYPE: BM! Ohlsson here published, first selected Ohlsson (1973). ISOLECTOTYPE: M!

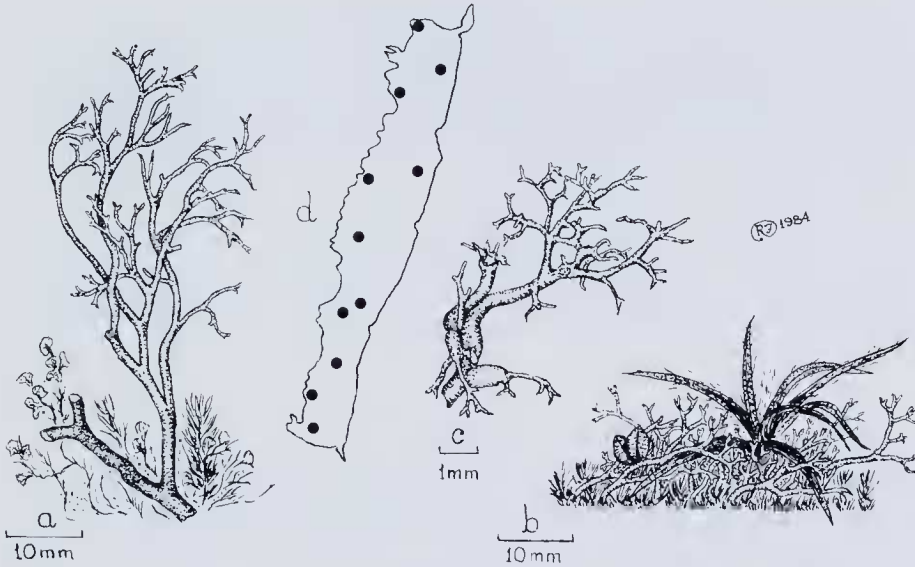


Fig. 2. *Sphaerophorus tener*. a — branch from a compact tuft growing in a sheltered habitat. b — prostrate branches growing over a cushion plant amongst bryophytes and other plants. c — distorted branch from specimen growing in a very exposed situation. d — known distribution on Macquarie Island. a from MEL 20291; b from MEL 1011254; c from MEL 8658.

Thallus growing amongst bryophytes, ferns and other lichens, over the tops of cushion plants, variable, forming compact tufts in sheltered habitats or extensive low patches in exposed positions, sometimes growing deep down in the moss cushions so that only the tips of the branchlets are exposed; branches terete or subterete, smooth, elongate, fragile, sparsely to frequently branched, sometimes entangled and anastomosing, 0.6-1.0 mm diam., pale greyish-white to pale brownish-white; fertile branches and apothecia not seen. *Pycnidia* terminal on apical branchlets of better developed specimens; microconidia not seen.

REACTIONS: P —, K —, KC —, C —, I —.

CHEMISTRY: Sphaerophorin and UV + unknowns.

SELECTED SPECIMENS EXAMINED:

Handspike Point, on rock outcrops c. halfway between base of point and bottom of the escarpment, 11.iii.1964, R. Filson 6319 & P. Atkinson (MEL 1047201); lower south slope of Boot Hill, 10.i.1972, R. Hnatiuk (MEL 1032817); top of hill above Bauer Bay, S. of small lake, 1.ii.1964, R. Filson 6277 & P. Atkinson (MEL 20414); half mile N. of Aurora Point, 20.ii.1964, R. Filson 6199 & R. Peterson (MEL 20258); Lake Flynn, 3.ii.1964, R. Filson 5890 & J. Phillips (MEL 20291); Major Lake, 19.ii.1964, R. Filson 6141 & R. Peterson (MEL 20254).

DISCUSSION:

Sphaerophorus tener is a very common lichen on Macquarie Island, growing in drier habitats along the featherbed flats and amongst the cushion plants on the plateau. It may be confused with *Cladia aggregata* (Sw.) Nyl., but can easily be distinguished from that species by the solid medulla and the lack of perforations through the cortex. It may be thought similar to some *Cladonia* species, but differs in being more intricately branched. It can easily be separated from both of these groups by the UV + reaction on the medulla and by the chemical constituents.

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